

A NEW SPECIES OF *PICEA* (PINACEAE) FROM NUEVO LEÓN, MÉXICO

THOMAS F. PATTERSON

Department of Botany, University of Texas, Austin, TX 78713, U.S.A.

ABSTRACT

A new species, *Picea martinezii* T.F. Patterson, is described from Nuevo León, México. It is a low elevation, large-cone spruce most similar to *Picea chihuahuana* Martínez.

Recently, *Picea chihuahuana* was reported by Müller-Using and Alanis (1985) from two locations in the Sierra Madre Oriental of Nuevo León, México. Previously, *P. engelmannii* Parry var. *mexicana* (Martínez) Silba was the only known spruce occurring in the Sierra Madre Oriental (Martínez 1963; Taylor and Patterson 1980). A trip was made to confirm the presence of the spruce and to make herbarium collections. Instead of *P. chihuahuana*, I found a different and very distinctive species, which is herein described. The locations of the new species, *P. chihuahuana*, and *P. engelmannii* var. *mexicana* are shown in Figure 1.

PICEA martinezii T.F. Patterson, sp. nov. (Fig. 2).

Picea chihuahuana Martínez simile sed acis planis flexilibus, pulvinis rotundatis, squamis strobili latioribus denticulatis, et seminibus longioribus differt.

Trees to 30 m tall, forming an open, irregular crown; bark thin, scaly, gray. Young twigs glabrous, yellow, becoming reddish brown and then gray; pulvini rounded; sterigmata ca 1 mm long. Buds conic, reddish-brown, 8–10 mm long, scales appressed, glabrous, margins scarious, apex acute; terminal buds with a basal ring of subulate scales. Leaves dark green, directed forward, straight or slightly incurved, flexible, 16–27 mm long, flat, 1–2 mm wide, sharp-pointed, keeled on one or both surfaces, with 4–10 rows of stomata on each side, resin canals none. Staminate cones not observed. Mature ovulate cones reddish brown, oblong-cylindric, 85–161 mm long, 40–62 mm wide, with thick, rigid, obovate scales 19–30 mm long, 18–25 mm wide, denticulate, apex becoming reflexed; bract 4 mm long, brown, deltate to oblong with a round apex, with or without a short, contracted base, margins, including the apex, erose-denticulate. Seeds brown, fusiform, slightly flattened, 5–8 mm long, apex rounded, base acute, wings 16–23 mm long.

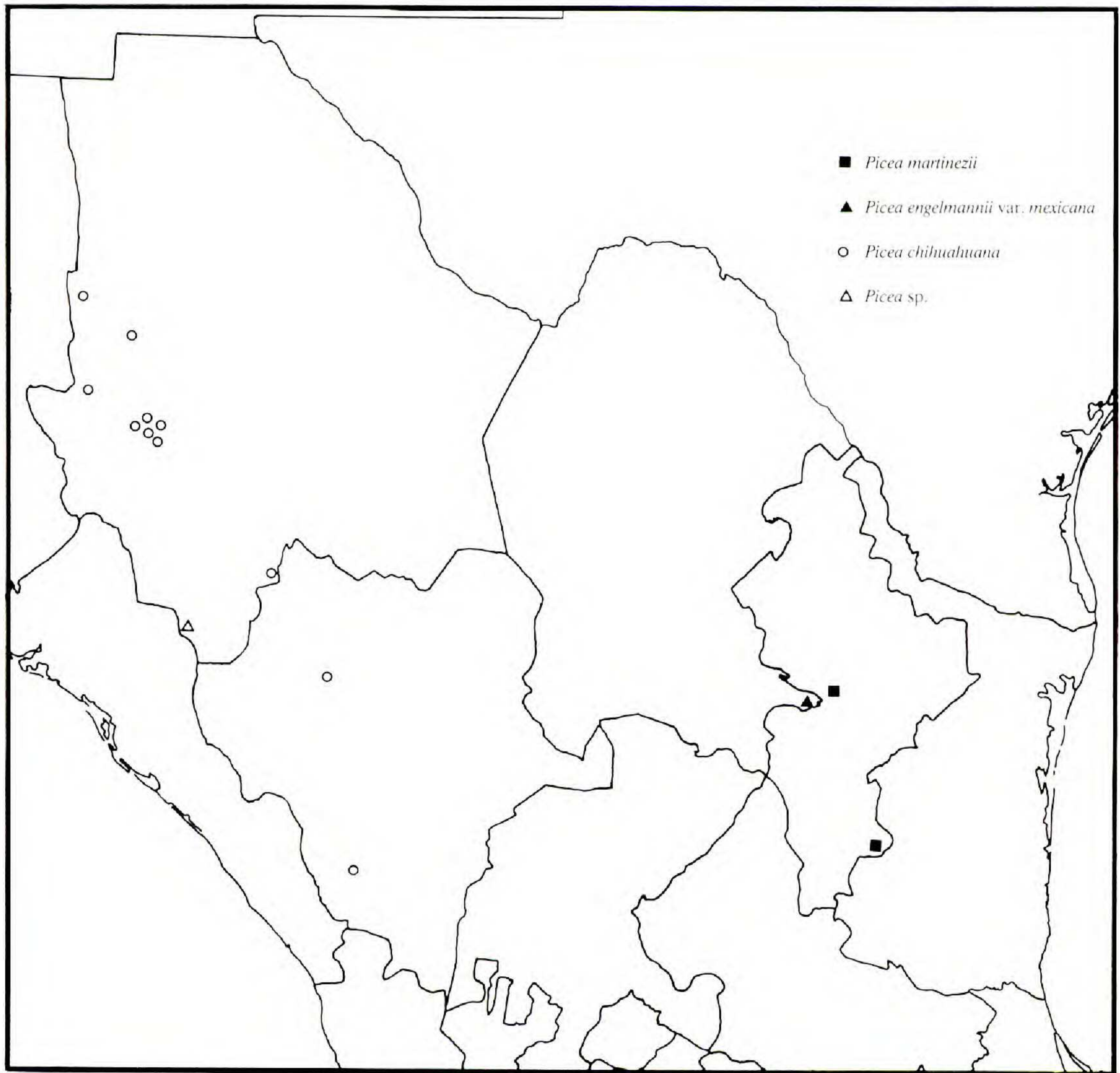


FIG. 1. Distribution of *Picea* in México.

TYPE: MÉXICO. NUEVO LEÓN, Mpio. Montemorelos, 6 km SE of La Trinidad on a NE exposed talus slope below the precipice "El Butano;" 25° 11'N, 100° 07'W; mixed conifer-deciduous forest; 2200 m elev.; 8 Jul 1987, *T.F. Patterson* 5629 (HOLOTYPE: TEX; ISOTYPES: ENCB, INIF, MEXU, MO, US).

Additional collection examined: MÉXICO. NUEVO LEÓN, Mpio. Zaragoza, Cañada La Tinaja, Rancho La Encantada, *T.F. Patterson* 5732 (TEX).

Picea martinezii is distinguished from all North American species except *P. breweriana* S. Wats. and *P. chihuahuana* by its large cone size. Like *P. breweriana*, it has flat needles but differs in its sharp-pointed needles with stomata on both surfaces, glabrous stems, and thicker cone scales. In its cones, *P. martinezii* is most similar to *P. chihuahuana* but differs in its needles (flat and flexible versus 4-sided and stiff in *P. chihuahuana*), pulvini (rounded versus flattened in *P. chihuahuana*), cone scales (18 – 25 mm wide

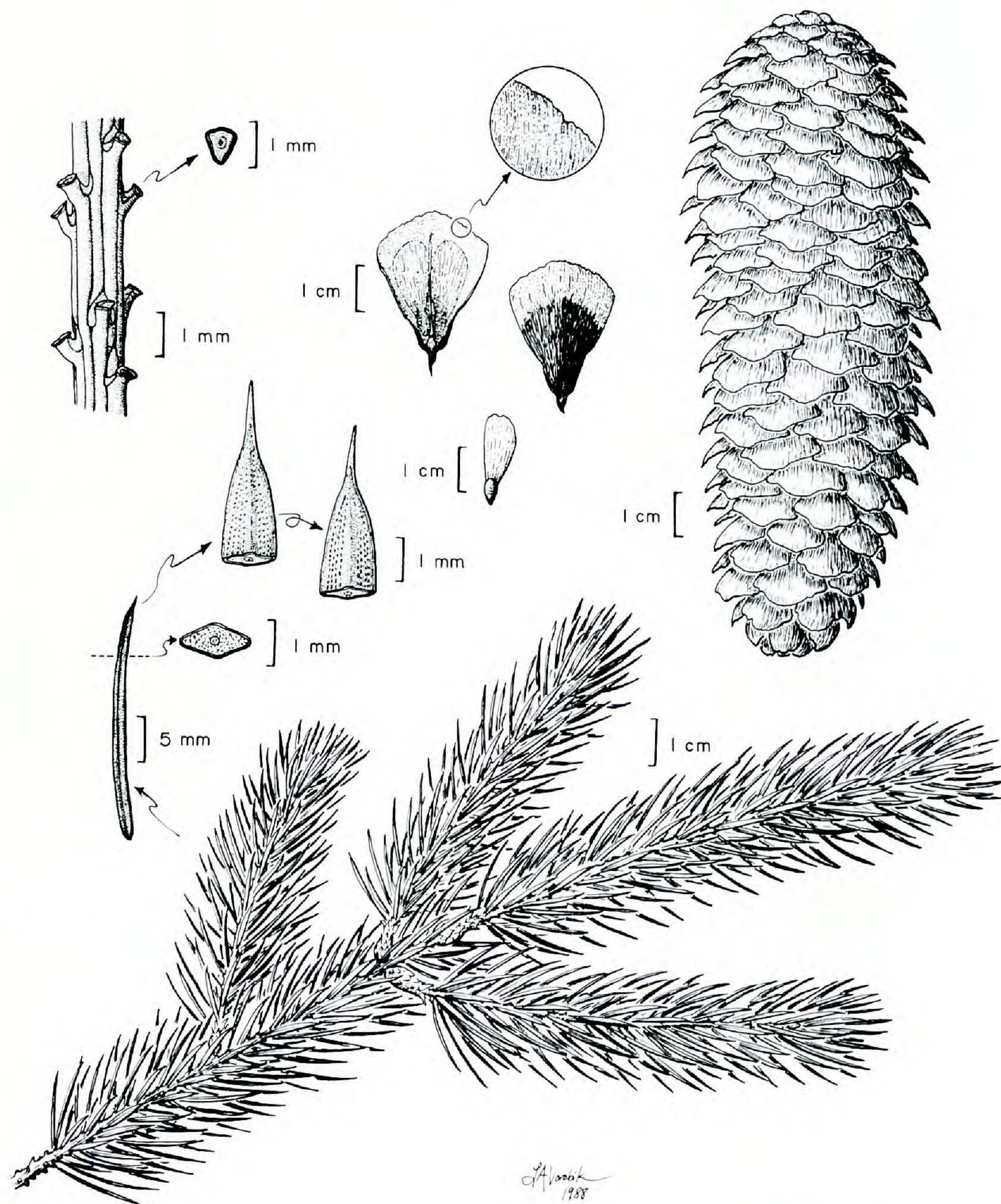


FIG. 2. Branch, cone, and details of *Picea martinezii*, from the holotype.

and erose-denticulate versus 11–18 mm wide and entire in *P. chihuahuana*), and seeds (5–8 mm long versus 3–5 mm long in *P. chihuahuana*). *Picea martinezii* is separated from previously known populations of *P. chihuahuana* in the Sierra Madre Occidental by more than 450 kilometers.

In the Sierra Madre Oriental, *Picea martinezii* is separated from *P. engelmannii* var. *mexicana* by about 25 kilometers. In habitat, these two spruces differ considerably. *Picea engelmannii* var. *mexicana* is a subalpine species that occurs above 3400 meters. *Picea martinezii* is a temperate montane species that occurs as low as 2150 meters in a mixed conifer-deciduous forest. At La Trinidad, *Picea martinezii* is associated with conifer species of *Pinus*, *Abies*, and *Taxus*, and is associated with the broadleaf species of *Quercus*, *Tilia*, *Ostrya*, *Cornus*, *Ilex*, *Juglans*, and *Crataegus*. This community occurs in a sheltered ravine protected by a limestone precipice of over 500 meters known as "El Butano." The trees are growing in pockets of deep humus between blocks of limestone talus. Surface water is non-existent because of numerous sinks and crevices in the limestone. Heavy rainfall, frequent fog, and a sheltered environment apparently have allowed this spruce community to persist.

The future of *Picea martinezii* looks promising. Presently, there is a considerable amount of regeneration. There is also much concern about protecting these populations. Müller-Using and Alanis (unpubl. ms. 1985) suggested ways these putatively disjunct populations of spruce could be legally protected. Seeds of the La Encantada population have been introduced to the Royal Botanic Gardens of Kew and to other arboreta (Rushforth 1986). The lumbering communities of La Trinidad and La Encantada have been told by the government foresters to protect the spruce population (pers. comm., local citizen). The La Encantada spruce community has been fenced off. And probably most encouraging of all, the logging road to the La Trinidad spruce community is starting to become overgrown and impassable.

Picea martinezii is a relict endemic of the Sierra Madre Oriental, a mountain range extending from northeastern México to southern México. Of the three spruces occurring in México, *P. martinezii* is a likely candidate for the source of spruce pollen recovered from lignites in southern México (Graham 1975), because it occurs at low elevations and is associated with temperate deciduous species on the eastern flank of the Sierra.

It is a pleasure to dedicate this new species to Dr. Maximino Martínez, whose book, *Las Pinaceas Mexicanas*, inspired me to explore the mountains of México.

ACKNOWLEDGEMENTS

I thank Guy Nesom for comments on the manuscript and for the Latin description. I also thank Dr. Linda Vorobik for the fine line illustrations, David Riskind and Jim Henrickson for their helpful comments and review of the manuscript, the Plant Resources Center at the University of Texas at

Austin for use of facilities, and my wife Scarlet for her patient support.

REFERENCES

- GRAHAM, A. 1975. Late Cenozoic evolution of tropical lowland vegetation in Veracruz, México. *Evolution* 29:723 – 735.
- MARTINEZ, M. 1963. *Las Pinaceas Mexicanas* (3rd ed.). Universidad Nacional Autónoma de México.
- MULLER-USING, B. and G. ALANIS. 1985. Nuevo registros del pinabete de Chihuahua (*Picea chihuahuana* Martínez) en Nuevo León. Propuesta para la protección legal de dos áreas de especial interés ecológico. Paper presented at the 1st Regional Conference of the Rio Grande Border States on Parks and Wildlife, Laredo, Texas.
- RUSHFORTH, K. 1986. México's spruces—rare members of an important genus. *The Kew Magazine* 3(3):119 – 124.
- TAYLOR, R.J. and T.F. PATTERSON. 1980. Biosystematics of Mexican spruce species and populations. *Taxon* 29:421 – 469.